

CLAIMS:

What is claimed is:

1. A non-destructive method for evaluating the strength of cancellous bone, comprising the steps of:
 - 5 providing a population of cancellous bone;
 - performing at least two of the following:
 - a manual compression test,
 - an apparent density test, and
 - an appearance test on each cancellous bone of said population of cancellous bone;
 - 10 determining a compressive strength for each cancellous bone of said population of cancellous bone based on said at least two tests performed;
 - comparing said determined compressive strength of each cancellous bone against a predetermined compressive strength requirement; and
 - eliminating a subset of cancellous bone from said population of cancellous bone, which
 - 15 subset of cancellous bone fails to meet said predetermined compressive strength requirement.
2. The method for evaluating the strength of cancellous bone according to claim 1, wherein said manual compression test and said apparent density test are performed on each cancellous bone of said population of cancellous bone in order to determine said compressive strength.
- 20 3. The method for evaluating the strength of cancellous bone according to claim 1,

wherein said manual compression test and said appearance test are performed on each cancellous bone of said population of cancellous bone in order to determine said compressive strength.

4. The method for evaluating the strength of cancellous bone according to claim 1,
5 wherein said apparent density test and said appearance test are performed on each cancellous bone of said population of cancellous bone in order to determine said compressive strength.

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5. The method for evaluating the strength of cancellous bone according to claim 1,
wherein said manual compression test, said apparent density test and said appearance test are performed on each cancellous bone of said population of cancellous bone in order to determine said compressive strength.

15 6. The method for evaluating the strength of cancellous bone according to claim 1,
wherein said tests are performed on each of said cancellous bones after each of said cancellous bones have been freeze dried.

7. The method for evaluating the strength of cancellous bone according to claim 1,
wherein said manual compression test includes the steps of:

20 manually compressing each of said cancellous bones to make a subjective determination of
said compressive strength of each of said cancellous bones; and
removing a cancellous bone from said population of cancellous bones when said manually compressed cancellous bone appreciably deforms.

8. The method for evaluating the strength of cancellous bone according to claim 2,
wherein said manual compression test includes the steps of:

manually compressing each of said cancellous bones to make a subjective determination of
said compressive strength of each of said cancellous bones; and

5 removing a cancellous bone from said population of cancellous bones when said manually
compressed cancellous bone appreciably deforms.

9. The method for evaluating the strength of cancellous bone according to claim 3,
wherein said manual compression test includes the steps of:

10⁴ manually compressing each of said cancellous bones to make a subjective determination of
said compressive strength of each of said cancellous bones; and
removing a cancellous bone from said population of cancellous bones when said manually
compressed cancellous bone appreciably deforms.

15 10. The method for evaluating the strength of cancellous bone according to claim 5,
wherein said manual compression test includes the steps of:

manually compressing each of said cancellous bones to make a subjective determination of
said compressive strength of each of said cancellous bones; and

removing a cancellous bone from said population of cancellous bones when said manually
20 compressed cancellous bone appreciably deforms.

11. The method for evaluating the strength of cancellous bone according to claim 1,
wherein said appearance test includes the steps of:

assessing a quality of each of said cancellous bones based on their individual appearance;
and

5 assigning each of said cancellous bones with a grade which designates a subjective quality
assessment of each of said cancellous bones.

12. The method for evaluating the strength of cancellous bone according to claim 3,
wherein said appearance test includes the steps of:

10⁴ assessing a quality of each of said cancellous bones based on their individual appearance;
and
assigning each of said cancellous bones with a grade which designates a subjective quality
assessment of each of said cancellous bones.

15 13. The method for evaluating the strength of cancellous bone according to claim 4,
wherein said appearance test includes the steps of:

assessing a quality of each of said cancellous bones based on their individual appearance;
and
assigning each of said cancellous bones with a grade which designates a subjective quality
20 assessment of each of said cancellous bones.

14. The method for evaluating the strength of cancellous bone according to claim 5,
wherein said appearance test includes the steps of:

assessing a quality of each of said cancellous bones based on their individual appearance;
and

5 assigning each of said cancellous bones with a grade which designates a subjective quality
assessment of each of said cancellous bones.

14 15. The method for evaluating the strength of cancellous bone according to claim 1,
wherein said apparent density test includes the steps of:

10 cleaning each of said cancellous bones;
freeze drying each of said cancellous bones;
measuring the dimensions of each of said cancellous bones;
determining a volume of each of said cancellous bones from said measured dimensions;
weighing each of said cancellous bones;

15 determining an apparent density for each of said cancellous bones; and
determining said compressive strength of each of said cancellous bones based on said
apparent density.

16. The method for evaluating the strength of cancellous bone according to claim 2,

20 wherein said apparent density test includes the steps of:

cleaning each of said cancellous bones;
freeze drying each of said cancellous bones;

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measuring the dimensions of each of said cancellous bones;
determining a volume of each of said cancellous bones from said measured dimensions;
weighing each of said cancellous bones;
determining an apparent density for each of said cancellous bones; and
determining said compressive strength of each of said cancellous bones based on said
apparent density.

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17. The method for evaluating the strength of cancellous bone according to claim 4,
wherein said apparent density test includes the steps of:
cleaning each of said cancellous bones;
freeze drying each of said cancellous bones;
measuring the dimensions of each of said cancellous bones;
determining a volume of each of said cancellous bones from said measured dimensions;
weighing each of said cancellous bones;
determining an apparent density for each of said cancellous bones; and
determining said compressive strength of each of said cancellous bones based on said
apparent density.

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18. The method for evaluating the strength of cancellous bone according to claim 5,
wherein said apparent density test includes the steps of:
cleaning each of said cancellous bones;
freeze drying each of said cancellous bones;

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measuring the dimensions of each of said cancellous bones;
determining a volume of each of said cancellous bones from said measured dimensions;
weighing each of said cancellous bones;
determining an apparent density for each of said cancellous bones; and
determining said compressive strength of each of said cancellous bones based on said
apparent density.

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